OBJECTIVE 21: MEDICAL SERVICES - FACILITIES

OBJECTIVE

Demonstrate the adequacy of the equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

INTENT

This objective is derived from NUREG-0654 which provides that OROs have the capability to provide medical services for contaminated, injured, or exposed individuals. (See evaluation criteria from Planning Standards F., H., L., and N.) Specific planning and preparedness provisions to meet this standard are contained in FEMA Guidance Memorandum (GM) MS-1, Medical Services.

Demonstration of this objective focuses primarily on responses of medical facility staff to contaminated, injured or exposed individuals. Demonstration also includes completion of these activities through adherence to the plans.

This objective is related to Objective 20, Medical Services - Transportation, the focus of which is the initial radiological monitoring of contaminated, injured or exposed individuals, and transport to a medical facility. For the purposes of this objective, it is assumed that radiological monitoring and transportation to a medical facility have been completed.

Demonstration of this objective focuses on:

- control of the spread of contamination from individuals who may be both contaminated and injured
- setting of priorities between the need to address radioactive contamination and prompt treatment for urgent medical conditions
- decontamination of contaminated individuals
- completion of activities through adherence to the plan

OBJECTIVE 21: MEDICAL SERVICES - FACILITIES
DEMONSTRATION CRITERIA

NUREG	CRITERION
L.1.,3.	**1. Appropriate medical facility staff are present or available on short notice.**

Explanation

Responsible OROs should demonstrate the capability to provide medical services to the contaminated injured have present, or the capability to secure on short notice the services of, at least one trained physician and one trained nurse who can directly supervise the monitoring and decontamination of individuals. When the doctor or nurse cannot perform these radiological functions, a health physics technician should be present during the exercise demonstrations. While OROs may utilize licensee personnel for radiological monitoring and contamination control functions involved in medical facility services, such arrangements be documented in ORO plans and supported by written agreements.

Extent of Play

Under this criterion, staff members designated in the plan should be present or available on short notice in order to effectively respond to a radioactively contaminated individual.

NUREG	CRITERION
F.2. H.10. L.1.,3.	**2. The receiving medical facility completes preparations for arrival of the individual and sets up appropriate contamination control measures.**

Explanation

OROs should demonstrate the capability to communicate with the transporting vehicles in order to complete effective preparations for the arrival of the individual(s). Information should be obtained regarding the nature and perceived urgency of the physical condition of the individual, vital signs, radiation monitoring results available prior to arrival, and estimated time of arrival.

OROs should demonstrate the capability to activate and set up a radiological emergency area (REA) for treatment. They should have equipment and supplies in place for treatment of contaminated, injured, or exposed individuals including skin wipes and solutions for decontamination of skin and wounds. OROs should demonstrate the capability to utilize contamination control procedures for reception of the transporting vehicle(s) with a

contaminated, injured, or exposed individual(s). They should demonstrate that the REA is isolated and self-contained and should prevent the spread of contamination through the following:

- all doors leading to the area remain closed or controlled
- ventilation systems are filtered or independent of other systems within the medical facility
- floors are covered to minimize contamination within the area
- appropriate radiation warning signs are in place
- unnecessary equipment is either removed or covered
- necessary equipment, including a portable x-ray machine, if applicable, is in place
- a buffer zone separating the REA from the rest of the facility is established
- medical facility staff who have direct contact with contaminated individuals wear gloves in order to avoid contact with radiological contamination
- shoe covers are used and removed when leaving the controlled area
- containers are provided for solid wastes and for contaminated clothing and wrappers from the patient

The monitoring technician(s) at the facility should demonstrate the availability of an operable survey instrument(s) for monitoring the patient, the treatment area and equipment, and the transport vehicle for radioactive contamination. The instrument(s) should be labeled on the exterior regarding instrument responsiveness to an identified check-source.

Instruments used for detecting contamination should be accompanied by a radioactive check-source that can be used as a single point calibration check. The instrument(s) used for monitoring is usually a portable instrument with a single probe containing a Geiger-Mueller type radiation detector and with a movable beta shield (e.g., a CD V-700). The minimum detectable level should be at least 300 counts per minute (cpm) above background for beta plus gamma radiation. More sophisticated monitoring equipment may be available at the medical facility. The instrument(s) should be equipped with earphones or a speaker so that the monitoring technician can watch the movement of the probe while monitoring without being distracted to read the meter indicator. The probe should be covered with thin plastic and the beta shield should be open. The purpose of the plastic

cover is to easily remove any contamination that might get on the probe. A plastic thickness of one to two mils (e.g., a sandwich bag) will be thin enough to avoid reducing the response of any significant beta radiation. A cover made of transparent plastic may be helpful to permit visual indication of whether the beta shield on the probe is opened or closed; however, this is not a requirement.

Prior to using an instrument(s) for monitoring, the monitoring technician should demonstrate the process of checking the instrument(s) for proper operation. This involves checking the battery status, measuring the radiation from the accompanying check-source, and comparing the result to the proper reading stated on the label. Once the operability of the survey instrument is confirmed, background radiation levels should be determined in the immediate vicinity where individuals will be monitored. An instrument that does not respond properly to these parameters should not be used.

The medical facility staff should demonstrate appropriate decision making regarding the priority of prompt treatment for urgent medical conditions over radiological monitoring and decontamination functions. If an urgent medical condition is postulated, then the appropriate decision is to forego radiological functions and to initiate prompt medical treatment.

Extent of Play

All activities involving communication with the transport vehicle and the preparation of the medical facility and equipment to receive the individual should be completed as they would be in an actual emergency.

The REA should be set up as in an actual emergency to provide an opportunity for a walk-through by evaluators.

Evaluation of decision making regarding the setting of priorities between the need for prompt medical treatment and radiological functions should be demonstrated by an evaluator's interview with appropriate medical facility staff.

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NUREG	CRITERION	
L.1.,3.	**3.**	**Medical facility personnel demonstrate the capability to determine if individuals are contaminated and demonstrate the procedures and equipment to remove contamination.**

Explanation

The medical facility staff should demonstrate the capability to monitor the individual(s) for external contamination. If monitoring was not performed prior to transport, radiological monitoring of the individual should be carried out by medical facility staff unless the individual has an urgent medical condition. Monitoring should be performed in the REA of the medical facility to determine the need for decontamination. They should demonstrate the capability to determine if wounds are contaminated by taking a reading directly over the wound or by sampling secretions and testing them for contamination.

The monitoring technician(s) should demonstrate the capability to make decisions on the need for decontamination of individuals based on guidance levels and procedures stated in the facility plan or, alternatively, 300 cpm beta-gamma above background with a CD V-700 survey instrument or equivalent.

Medical facility staff should demonstrate the capability to follow decontamination procedures for cleansing areas with appropriate solutions. Procedures for appropriate disposal or decontamination of instruments, clothing, and medical equipment also should be demonstrated.

Records should be maintained of all survey results, using forms required by the plan and information provided to the treating physician.

The capability to analyze any samples from contaminated, injured, or exposed individuals should be demonstrated at medical facilities or obtain use of the medical facilities' laboratory and to transmit results from the analyses to the medical staff for use during examination of individuals. They should demonstrate the capability to maintain records of all survey measurements and samples taken.

Extent of Play

All monitoring activities should be completed as they would be in an actual emergency.
Under this criterion, an individual should play the role of a contaminated, injured, or exposed individual. The individual's injuries may be indicated on an attached tag or controller inject.

Contamination of the individual or the individual's clothing should not be simulated through

the use of lantern mantles or other low-level radiation sources such as a radium dial watch. All procedures for the collection and analysis of samples and the decontamination of individuals should be described to the evaluator. Decision making regarding the setting of priorities between addressing radioactive contamination and an urgent medical condition should be evaluated based on an evaluator's interview with the medical facility personnel.

While it is preferable to activate medical facilities in exercises as necessitated by scenario events, medical facilities, taking part in the exercise may be designated before the exercise. Information on the extent of contamination and nature of the medical injury of individuals should be developed as part of the scenario, but should not be provided to players prior to the exercise.

NUREG	CRITERION
L.1.,3	**4. Medical facility personnel maintain contamination control measures during and after treatment of individual.**

Explanation

Medical facility staff should demonstrate the capability to minimize the spread of contamination within the REA, to other parts of the medical facility, to noncontaminated areas of the patient, and to themselves. They should demonstrate the capability to transfer contaminated, injured, or exposed individuals, after decontamination, to a clean area within the facility in a way that precludes or minimizes the spread of contamination from the REA into other areas of the medical facility.

The medical facility staff should demonstrate the use of monitoring instruments and contamination containment procedures to ensure that contamination is not carried from the REA to other parts of the medical facility. They should demonstrate procedures sufficient to ensure that all protective clothing is removed within the REA and that staff members and equipment are monitored for contamination prior to entering buffer zones. Responsible OROs should demonstrate the capability to use action levels for detecting radiological contamination and initiating decontamination of the individual.

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Extent of Play

Under this criterion, all contamination control procedures should be followed as they would be in an actual emergency.

NUREG	CRITERION
N.1.a.	**5. All activities described in the demonstration criteria for this objective are carried out in accordance with the plan, unless deviations are provided for in the extent-of-play agreement.**

Explanation

Responsible OROs should demonstrate the capability to follow policies, implement procedures, and utilize equipment and facilities contained in their plans and procedures. OROs should demonstrate that they can follow sequences outlined in the various procedures and perform specified activities, as necessary.

Extent of Play

Under this criterion, all activities should be carried out as specified in the plan, unless deviation from the plan is provided for in the extent-of-play agreement.

CLARIFICATION OF TERMS

The following definitions describe the limited meaning of terms in the context of the exercise evaluation methodology and may vary from the full technical definitions for all circumstances.

Action levels refers to thresholds for contamination levels that trigger the need for decontamination and should be established in the plans .

Buffer zone (medical facilities) indicates an area adjacent to the radiological emergency area (restricted zone) for which protective measures are recommended to minimize both exposure to radiation and the spread of radiological contamination to radiological clean areas of the facility.

Contaminated, injured, or exposed individuals refers to individuals who are: contaminated, contaminated and otherwise physically injured, or exposed to high levels of radiation.

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Controller inject refers to the introduction of events, data, and information into exercises to drive the demonstration of objectives.

Facility refers to any building, center, room(s), or mobile unit(s) designed and equipped to support emergency operations.

Fixed contamination refers to contamination that remains after loose contamination has been removed by decontamination.

Health physics technician refers to an individual trained in radiation protection. For this objective, such individuals advise medical facility staff regarding the radiological monitoring and decontamination of individuals.

High levels of radiation refers to doses of 100 rem or greater.

Measuring refers to counting to detect radiation levels or determining other parameters, such as the energy of radiation or physical characteristics of samples, such as the volume of an air sample.

Monitoring refers to the measurement of radiation levels, usually with a portable survey instrument.

Radiological emergency area refers to an area established on an ad hoc basis in a medical facility for monitoring, decontamination, and treatment of contaminated injured individuals, and for contamination control.

Sampling refers to collecting specimens of materials (e.g. particles or radioiodine in the air) at field locations.

Urgent medical condition, as used in this objective, refers to problems for which a delay in treatment may cause extended recovery time, reduced level of recovery, or death.

Walk-through refers to a type of evaluation in which evaluators inspect the physical layout of a facility or area including equipment, attendant resources, and procedures to determine conformity with specific ORO plans.